

Scientific Inquiry

2-1 The student will demonstrate an understanding of scientific inquiry, including the processes, skills, and mathematical thinking necessary to conduct a simple scientific investigation.

2.1.4 Infer explanations regarding scientific observations and experiences.

Taxonomy Level: 2.5-B Understand Conceptual Knowledge

Previous/Future knowledge: In kindergarten (K-1.3), students predicted and explained information or events based on observations or previous experiences. In 3rd grade, students will infer meaning from data communicated in graphs, tables, and diagrams (3-1.6) and explain why similar investigations might produce different results (3-1.7). In 4th grade (4-1.4), students will distinguish among observations, predictions, and inferences. In 7th grade (7-1.6), students will critique a conclusion drawn from a scientific investigation.

It is essential for students to give a logical explanation based on scientific observations, evidence, or knowledge gained from past experiences.

Scientific observations are made by using the senses or taking measurements. Making *observations* is a way of learning about the world around us.

- A *scientific observation* is one that anyone can make and the result will always be the same. For example, the animal is black, has four legs, and feels soft.
- An *unscientific observation*, or an opinion, is one that not everyone may agree on. For example, the dog is happy.
- Observing does not mean just looking at something. It involves the use of several or all of the five senses (seeing, hearing, smelling, touching, and tasting) using appropriate observation methods for each sense, such as wafting an odor so that its smell can be described or gently touching the edges of seashells to determine their textures.
- Tasting in science should only be done with the permission of the teacher under controlled conditions.
- Observing helps to find out about objects (their characteristics, properties, differences, similarities) and events (what comes first or last, or what is happening at a particular moment).

To make an *inference*,

- Observe an object or event
- Think about what was observed, considering past experiences
- Give an explanation for what was observed
- Make more observations of the object or event
- Think and explain again

It is not essential for students to distinguish between an observation and an inference.

Assessment Guidelines:

The objective of this indicator is to *infer* explanations regarding scientific observations and experiences; therefore, the primary focus of assessment should be to give reasonable explanations from observations or experiences. However, appropriate assessments should also require students to *recognize* a scientific observation; or *match* explanations and observations.